

REMARKS

Reconsideration and withdrawal of the rejection with respect to all the claims now in the application (i.e., Claims 1 and 4-6 and 8-21 and 24) is respectfully requested in view of the foregoing amendments and the following remarks:

Initially, Applicant wishes to thank Examiners Jolley and Beck for granting the personal interview to applicant's attorney and Mr. Bhagi on January 13, 2003. Specifically, the patent assignee's representative Mr. Bhagi and applicant's attorney wishes to thank both Examiners Jolly and Beck for their careful consideration of the arguments presented and their suggestions regarding the type of supporting evidence which would be helpful to better demonstrate the patentable significance of the invention.

More specifically, the Examiner has requested further information to establish that those skilled in the art recognize that there is a difference between thermochromic inks and thermochromic paints. Applicant has previously submitted to the PTO product literature from the Pilot Ink Company showing that they offer for sale a variety of thermochromic pigment formulations including thermochromic printing inks and thermochromic paints. That these are different formulations, intended for different applications is clear in context from the brochure. A further copy of that document is enclosed herewith as Exhibit A.

Also previously consideration by the PTO is Shibahaski, U.S. 4,425,161 (attached hereto as Exhibit B). This patent at col. 16, line 40 to col. 18, line 34, describes

various chemicals with thermochromic properties, gives details of how to prepare (1) thermochromic printing inks... and (3) thermochromic paints. This shows that the pigment manufacturers consider inks and paints to be separate and distinct compositions.

Also enclosed are copies of promotional literature from Matsui Inc. (Chromicolor) (3 pages) and from Thermographic Measurements Co. Ltd (TMC) (6 pages excerpted from their website) attached hereto as Exhibits C and D, respectively. As with the Pilot Ink Company, they both specifically offer thermochromic inks and thermochromic paints as part of their extensive product portfolio. Thus, while the exact compositions of these different formulations are not available to the public, being trade secrets, it is clear in context that these manufacturers all believes that their inks are different to their paints. Indeed, why else would they advertise them and promote them as separate items with different uses?

Also submitted herewith for the Examiners' attention are excerpts from the website of Chromatic Technologies Inc. and from Nazdar on color change inks (12 pages attached hereto as Exhibit E). The pages have been numbered sequentially for ease of reference. Pages 1 and 2 of the Chromatic excerpted web pages show that a range of inks are offered for sale and that various formulations (Page 2) are available depending on the type of printing process which is to be used. For example, if a wet offset printing process was to be employed then a wet offset thermochromic ink would be purchased. This further substantiates Applicant's earlier argument that inks are special and specific formulations intended to be applied by a particular printing process.

Pages 3 and 4 contain the technical data sheet for a water-based flexographic ink. The Examiners' attention should be drawn in particular towards the section on sensitivity. Such inks are sensitive to heat and chemicals and one would expect that such inks would be degraded by both the drying temperature in the process defined in the present invention and by repeated exposure to dishwasher conditions. That even supposes that such a water-based ink could be made to adhere to a glazed ceramic surface.

Therefore, it should be apparent that the general teaching, or understanding of those skilled in the art, e.g., both the thermochromic ink manufacturers and from those who are familiar with the properties of thermochromic inks, would be to teach away from attempting to apply a water-based ink to an item that was going to be repeatedly heated and cooled in a harsh chemical environment, as presently proposed.

As can be seen from amended Claim 1, Applicant has now limited the claims to spraying water-based inks directly onto the substrate surface. It may therefore be appropriate to distinguish between water-based and other forms of ink, e.g. epoxy inks. Some of the differences are set out in the literature from Chromic Technologies, Inc. on pages 5 to 10, and in particular in the data sheet for epoxy screen ink on Pages 11 and 12 (Exhibit E). From the data sheet it will be seen that:

1. The ink is in a two-part formulation and, once mixed, it results in a viscous liquid with a life of up to 90 minutes only;

2. This viscous liquid is intended for screen printing not spraying as presently claimed;
3. The ink must never be heated over 100°C (Note: Claim 14 of the invention process of the present invention specifies a heat curing process of 100 to 165°C for 25 to 30 minutes); and
4. These thermochromic inks are sensitive to heat and chemicals and, one would expect, would be degraded by repeated exposure to dishwasher conditions.

Thus, even these current publications tend to teach against the present invention.

It should be noted that Claim 7 has been cancelled and Claims 18 and 21 have been amended to conform to the changes made to Claim 1. A new claim 24 has also been added which refers to the preferred feature of adding an electrostatic thinner prior to spraying (support for which can be found at p. 2, 4th paragraph).

Finally, enclosed herewith are three Declarations under 37 C.F.R. 1.132 - namely (1) a declaration from Alan Jones who is currently Technical Sales Executive for Neogene Paints (Exhibit F); (2) a declaration from Charles Boyce, who is currently Managing Director and Vice President of Matsui International Company, Inc. (Exhibit G)

and (3) a declaration from Shinel Bhagi, Assignee's representative who is Managing Director of Neil Brothers, Ltd. (Exhibit H). Between them the declarations cover the following topics:

- use of different water-based inks;
- use of a solvent-based thermochromic ink in a process instead of an aqueous thermochromic ink;
- inability and unsuitability of screen printing process to cover an entire mug;
- qualitative measure of the commercial success of the invention in the UK and USA.

The declaration of Alan Jones (Exh. F) particularly emphasizes the differences between thermochromic inks and paints. Mr. Jones indicates that he has been working in the paints and coatings industry in a technical capacity for over twenty years and that during such time he has worked extensively with thermochromic pigments in a variety of formulations including thermochromic inks and paints (paragraph 2). He particularly points out that thermochromic inks as supplied by Matsui were never designed for electrostatic spraying (paragraph 7) and that thermochromic paints and inks are not the same. It is clearly evident from Mr. Jones' declaration that the properties associated with thermochromic inks and paints would not afford a teaching of the present invention (see, inter alia, paragraph 3-7 and 10).

The declaration of Alan Jones also refers to an experiment Mr. Jones conducted to compare a mug made by solvent-based thermochromic ink instead of a water-based or aqueous thermochromic ink as prepared according to the present invention (the so-called

"WOWMUG"). Enclosed with Mr. Jones declaration is Exhibit ARJ1 which is an example of a mug made using a solvent-based thermochromic ink instead of a water-based or aqueous thermochromic ink as presently claimed (note paragraph 11). Even though it was also sprayed, it can be seen the smoothness of finish of the solvent-based thermochromic ink is no where near as good as that as the "Wowmug", the mug made by the Applicant according to the claim process using a water-based thermochromic ink (previously exhibited to the Examiners at the interview) . As further noted therein, the products of such a process using a solvent-based product is not commercially acceptable (paragraph 11). Mr. Jones also points out that screen printing of a mug would not be a commercially acceptable alternative because there would be regions of the mug where it would be impossible to screen print an image (paragraph 14-16)

The second declarant, Charles Boycé, is also an expert in the field having worked for the past 15 years as V.P. of Matsui International Company, Inc., which distributes a wide range of pigments, inks and ink products for a broad range of products. In his declaration (Exh. G with Exhibits CB1-CB3), he also refers to the novelty and unobviousness of the inventive process compared to the state of the art (par. 3-8).

Lastly, the declaration of Shinel Bhagi (Exh. H), the representative of Applicant's Assignee, particularly emphasizes the commercial success of the inventive product currently referred to as the "MYSTIQUE MUG" having sales of around of one million dollars (\$1,000,000) per year for the three consecutive years 1999, 2000, and 2001 as compared to sales of about one hundred thousand dollars (\$100,000) per year over the

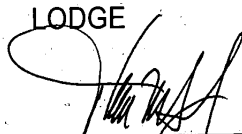
same period for the so-called "Magic Mugs" which are the previous generation of color change mugs (par. 3). As indicated by Mr. Bhagi, this ten fold increase in sales is all the more remarkable because there has been no major advertising campaign for the "Mystique" product (paragraph 3). It is noteworthy that Applicant's invention also won a major U.K. promotional award in 1998 as the most inventive scheme run by one of the U.K.'s promotional magazines (par. 7).

From the foregoing, it is evident that the present invention is neither disclosed nor suggested by the prior art and, in fact, the state of the art would essentially teach away from the invention as now claimed. The present invention has received significant commercial success and has even won an award as a novel product in the industry. Clearly, the present invention is a significant advance in the state of the art which merits patent protection based upon the claims as now submitted.

In view of the foregoing, it is respectfully submitted that the claims, as now amended, are patentably distinguishable over the references of record. Accordingly, allowance of the claims at an early date is earnestly solicited.

Respectfully submitted,

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